December 2006

Your Water, Your Future

by Dauphin County Conservation District

Dauphin County's Stormwater Publication for Municipalities

1451 Peters Mountain Road • Dauphin, PA 17018
717.921.8100 • www.dauphincd.org

In this issue...

- Welcome
- Stormwater Impacts

Next issue...

- Watersheds and the Water Cycle

This publication is funded by the League of Women Voters of Pennsylvania Citizen Education Fund through a Section 319 Clean Water Act grant from the Pennsylvania Dept. of Environmental Protection.

Welcome to the first issue of *Your Water, Your Future*, a newsletter produced as part of Dauphin County Conservation District's Municipal Stormwater Outreach Initiative.

Local officials like you must make decisions to manage stormwater in your community. Proper management can mean the difference between a healthy stream and a stream that brings problems with flooding, polluted water, and complaints from citizens.

DCCD serves as a countywide clearinghouse for information about current regulations, trends, and stormwater management strategies as they relate to local land use, development and water quality issues. We can help you understand your choices for managing stormwater in a way that ensures enough clean, safe water for your citizens and that preserves the value of the local landscape for the future.

Future issues of *Your Water, Your Future* will address the effects of stormwater and how you can make a difference with your decisions. We'll feature topics on investing in good water quality, looking at groundwater as a resource, the economics of stormwater management, and various other topics. We also plan to hold workshops that build on these topics–details will be announced in an upcoming issue.

We would like to hear your thoughts on this publication and how it could better serve your stormwater management needs. If you have experiences to share or questions about a topic covered in this newsletter, please contact us. Another municipality going through a similar situation may find your perspective to be helpful.

Funding for this newsletter series is from a grant from the League of Women Voters of Pennsylvania Citizen Education Fund's Water Resources Education Network (WREN). Swatara and West Hanover townships have joined DCCD as grant partners in support of this initiative. As we carry out this project, we'll explore ideas and actions that are working to control stormwater. The future is important, and planning ahead to safeguard our water resources is something we can all do together.

We appreciate your support!

Stormwater 101

Let's face it – stormwater management is a fact of life for any municipal entity, though its priority level will vary by municipality according to various factors, such as population density, land use, and the extent of legal regulations that apply to your jurisdiction.

Understanding the impacts that stormwater runoff can have on your municipal budget, infrastructure and local natural resources can produce solutions that enhance your municipality's landscape for the future.

Impact on Water Supply

In a natural setting, rainfall soaks through the ground surface and seeps down through subsurface layers of soil and rock to replenish the groundwater supply, the main source of drinking water for many rural residents and some municipalities. Expanding impervious surface area in the form of roads, parking lots and building rooftops reduces the amount of land available to absorb rain and snowmelt, causing a reduction in the amount of water available to recharge groundwater resources. Low groundwater levels cause wells to run dry.

Fact: *An estimated 17% of Dauphin County residents get their drinking water from private wells; an additional 10% of residents receive water from a public water utility supplied by underground springs and wells.*

Another effect of groundwater shortage is lower stream flow outside of storm events, because streams are fed by groundwater, not by rainfall. When the water level underground drops, streams lose their source and water levels decrease. Until the groundwater supply is replenished, streamflow may be reduced to a trickle, or it may disappear entirely, leaving a dry streambed in place of a stream.

In the past decade, droughts have increased in frequency and severity across the state. While drought is typically associated with lack of rainfall, its effects are compounded when the groundwater supply is already low. Municipalities that lack an adequate water supply may be required to explore very expensive alternatives to groundwater supply in order to support population growth.

Quiz - True or False

1. Municipal governments have the most responsibility for how stormwater is managed.
2. One-third of Dauphin County households draw their drinking water from private wells.
3. The greatest source of pollution to our waterways is not from industrial waste, but from contaminants carried in runoff.
4. Dauphin County has 52 miles of streams located in developed areas that are classified as being impaired according to state standards for water quality.
5. The focus of implementation for new regulations relating to stormwater management is local governments.

Answers on reverse side, bottom of the page.

Local governments have the most direct influence on groundwater supply and water quality through their authority to regulate land use. A stormwater management strategy that prioritizes infiltrating runoff into the ground to recharge the groundwater supply will help alleviate water supply shortages, both above and below the surface.

(cont.)

Impacts of Stormwater (cont.)

Flooding Impacts

Flooding is an occasional natural event in all streams. However, if the stream is located in a developed area, flooding becomes a much more frequent and critical concern.

Water that falls on impervious surfaces, such as roads, parking lots and rooftops, meets few obstacles to slow its rate on the path towards the storm sewer.

Simultaneously, the volume of surface runoff flowing to the storm sewer is increasing, because impervious surfaces prevent rainfall from being naturally absorbed into the ground. Once in the storm sewer system, runoff is piped quickly to a stream or to a wastewater treatment plant. The combined increase of the speed and volume of runoff means that more runoff is discharged to a stream in a shorter amount of time. This causes flooding, which results in resident complaints, and property damage and expenses associated with flood recovery, a portion of which may be borne by a municipality.

Fact: In 2005, Hurricane Ivan caused $2.4 million in flood damage in Dauphin County.

Flooding also causes streambank erosion, where sediment stripped from the streambank is carried away in runoff, contributing to degraded water quality downstream.

Another concern in regards to water supply is that floods are relatively short-lived events. They do not provide adequate time for excess water to *infiltrate*, or seep, into the ground. Therefore, an area experiencing a groundwater shortage generally will not realize a significant change in groundwater supply levels, despite an abundance of water on the surface.

By promoting stormwater techniques that infiltrate water into the ground, thereby reducing the amount of runoff delivered to streams, municipalities can minimize flooding and its effects upon the local community, as well as communities downstream.

Water Pollution

People are often surprised to learn that the greatest source of pollution to our waterways is not from industrial waste, but from contaminants carried in runoff, or *nonpoint source pollution*. Nonpoint source pollutants include: sediment from construction sites, oil and gas from vehicles, fertilizers, pesticides, herbicides, pathogens and household chemicals.

During a storm, these pollutants are picked up from impervious surfaces and carried in runoff, then discharged to a stream. The addition of sediment and toxic chemicals causes harmful effects on drinking water supplies, recreation and habitat for fish and wildlife.

A prime example of the effects of nonpoint source pollution is the Chesapeake Bay, which receives one-third of its water supply from the Susquehanna River. Degraded water quality and loss of habitat resulting from an overload of nonpoint source pollution have led to alarming reductions in the blue crab, oyster and fish populations in the past 30 years. Subsequently, the fishing and tourism industries have realized negative economic impacts. However, intensive targeted efforts to improve conditions in the Bay have begun to realize progress towards recovery of the Bay ecosystem.

Because Dauphin County streams discharge to the Susquehanna River, our actions locally contribute significantly to the improvement or decline of the Bay's health. The Chesapeake Bay Foundation's slogan, "We all live downstream" emphasizes the interconnected character of natural resource stewardship.

Economic Impacts

Repair and Cleaning Costs–As previously mentioned, increased stormwater flows exhibit greater volume, velocity and destructive power. Impacts to municipal property include washed out and eroded sections of roads, bridges and existing infrastructure, such as underground pipes and utility lines. Clogged culverts are costly to maintain and can increase nuisance flooding, and sediment and debris deposited on roads after a storm may require more frequent street sweeping. In short, maintenance and repair expenses can cost a municipality thousands of dollars.

Who moved the pole? Streambank erosion can create problems for existing infrastructure.

Loss of Tax Revenue–Environment plays a significant role in determining where residential, commercial and industrial development occur. Proximity to water is among the top characteristics potential landowners consider when buying property, and its aesthetical value should not be discounted - a study by the National Association of Home Builders indicates that property located near water raises the value of a home by up to 28%.

Inadequate management of stormwater runoff damages stream channels, eroding banks and producing murky water loaded with sediment. Unsightly waterways and land can adversely impact property values, and may cause developers to build elsewhere, resulting in a loss of municipal tax revenues.

Water-based Recreation and Tourism–Recreation and tourism is currently the number two industry in Pennsylvania. Water-based recreation, such as fishing, swimming and boating, is the fastest growing sector of the industry, generating millions of dollars for industries, commercial establishments, and tax revenues for local government.

Fact: Stocked trout fishing contributed $66 million to the state's economy in 2005 and supported 1,119 industry-related jobs. Dauphin County's trout-stocked streams enable local municipalities to share in this revenue. - *PA Fish & Boat Commission study*

Dauphin County's 933 miles of streams provide ample opportunity for recreation activities. However, 52 miles of our streams located in developed areas are classified as being impaired according to state standards for water quality, due to nonpoint source pollution carried in runoff. Sound stormwater management can preserve the recreational value of local waterways and, in turn, promote tourism, bringing extra revenue to businesses in your municipality.

Regulations

Due to their legal authority to manage stormwater at the local level, municipalities are the focus of federal and state regulations targeting stormwater management. This trend is likely to continue, in light of an increased focus at the federal level for the need to improve the quality of our nation's water resources for the future.

Conclusion

Consider that stormwater, despite its unpredictable nature, is a valuable water resource. With some effort, it can be used more effectively to benefit the citizens in our county. Enacting measures based on sound principles of planning can balance the growth of development within your municipality with the preservation of the landscape for future generations to enjoy. As a decision maker for your municipality, you have a key role in determining how this resource will be managed. ☐

Next Issue: Watersheds and the Water Cycle

Please contact Gil Hirschel at 921-8100 regarding questions, comments, and requests for additional information.

Quiz Answers

1-True; 2-False; 3-True; 4-True; 5-True